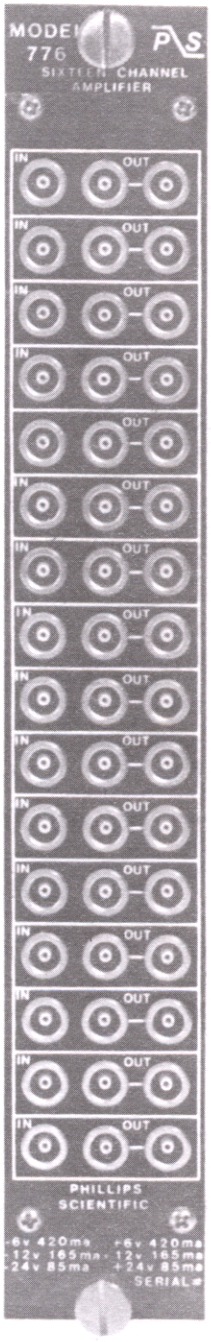
Phillips Scientific

16 Channel Photomultiplier Preamplifier

NIM MODEL 776

FEATURES

- Fixed Gain of 10 Non Inverting
- Wideband DC to 275 MHz
- High Density — 16 Channel NIM
- Low Noise — Less than 25 μV RMS
- Cascadable for Gains of 100
- Excellent Stability, Gain and Offset
- Fan Out of Two
- All Inputs and Outputs Protected



DESCRIPTION

The Model 776 provides 16 independent, direct-coupled amplifiers in a single width NIM module. Each channel has a non-inverting voltage gain of 10, operates from DC to 275 MHz and has two 50 Ω outputs. It's designed for use with fast photomultiplier detectors having negative going output pulses.

This amplifier exhibits excellent DC and high frequency stability. Two channels can be cascaded to obtain voltage gains of 100 while maintaining pulse fidelity without significant overshoot or baseline drift. Each channel has an internal DC offset adjustment allowing for compensation of the DC output due to variations of input source impedance or grounding differences.

The output stage is a low-impedance voltage source design with short-circuit protection. No damage will occur from overloading or continuous shorts to ground. The outputs are designed to drive two 50 Ω loads. However, unused outputs may remain unterminated with no adverse effects.

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INPUT CHARACTERISTICS

General:

One LEMO input connector; 50 ohms ±2%, Direct Coupled; less than 4% input reflection for a 2.0 nSec input risetime; Input protection clamps at ±.7V and can withstand ±2 amps (±100V) for the duration of 1 uSec or less with no damage to the input.

Wideband Noise:

Less than 25 uVolts RMS, referred to the input. Spectral density of less than 1.5 $nV/\sqrt{Hz}$.

Input Offset Voltage:

Less than ±300 uVolts with 50 ohm source impedance.

Overdrive Recovery Time:

Less than 20 nSec for a 1 Volt input.

OUTPUT CHARACTERISTICS

General:

Two bridged LEMO connectors per channel, Voltage source output stage, each output capable of driving a 50 ohm load. Unused outputs do not require terminating for proper operation.

Output Voltage Swing:

Greater than -3 Volts across 25 ohm load. Positive outputs linear to +.5 Volts across 50 ohm load or +.25 Volts across 25 ohm load.

Output Protection:

Completely protected against overloading. Outputs can be continuously shorted to ground without suffering damage.

Offset Voltage:

Less than ±4 mVolts, an internal 15-turn potentiometer provides control of ±100 mVolt to compensate for offsets due to ground drops or source impedances other than 50 ohms.

GENERAL PERFORMANCE

Gain:

10 ±2%, Non-inverting.

Stability:

Better than ±5.0 uV/°C, Referred to the input, and ±0.01%/°C, above 1 MHz.

Integral Linearity:

±0.1% to -3 Volts, DC to 100 MHz into 50 ohms.

Bandwidth:

DC to 275 MHz minimum, 3 db point; 1 Volt output excursion.

Risetime and Falltime:

Less than 1.3 nSec for a 1 Volt output excursion into 50 ohms.

Crosstalk:

Greater than 60 db Isolation between channels, DC to 100 MHz.

Input to Output Delay:

Typically 3.0 nSec. - 3.5 nSec maximum.

Power Supply Requirements:

- 6 Volts @ 320 mA	+ 6 Volts @ 320 mA
-12 Volts @ 150 mA	+12 Volts @ 150 mA

NOTE: All currents are within NIM specification limits permitting a full powered bin to be operated without overloading.

Operating Temperature:

0°C to 70°C ambient.

Packaging:

Standard single width NIM module in accordance with TID-20893 and section ND-524.

Quality Control:

Standard 36-hour, cycled burn-in with switched power cycles.

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